

Physical Chemists

Challenging opportunities exist at the senior scientist level with background and/or experience in:

- The thermodynamics of highly refractory compounds. This includes experimental studies of vaporization at high temperatures and calculations of thermodynamic functions of the condensed phases up to 6000° K.
- Basic experimental and theoretical studies of chemical reactions of highly refractory compounds with gases at very high temperatures with particular emphasis on the kinetics of surface reactions.
- X-ray diffraction studies of new high temperature and solid state materials.

Send resume to
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However, most material is presented in a satisfactory way. The second half of this book describes measurements, of both optical and related processes, on a considerable fraction (so many there is no point in listing them) of the known semiconductors. This material is presented in a way that emphasizes physics and as such will be appreciated by physicists. Anyone attempting to use this book as an optical device handbook may be disappointed. However, this will not be the case if he uses it as an aid to obtaining an understanding of the optical properties of semiconductors.

The utility of this book—and many others—would be considerably improved if it contained a list of symbols with short definitions (and possibly the number of the page on which each was introduced). This shortcoming becomes really apparent when one attempts to refer to the book a month or two after having read through it. Certainly this omission is the responsibility of the publisher.

Properties of Matter (3rd Revised Ed.). By F. C. Champion and N. Davy. 334 pp. Philosophical Library, Inc., New York, 1959. \$10.00. *Reviewed by M. W. Friedlander, Washington University.*

WITH the present publicity attendant upon matters nuclear and atomic, with the current emphasis on such topics in university courses, and with an ever-increasing deluge of related books, it is well to remember that very large areas of pure and applied physics require an understanding of the classical properties of macroscopic quantities of matter. This is so even though we can now "explain" these areas in terms of nuclear, atomic, and molecular properties.

There is a need for books which give a well based introduction into this area. That is not to say that these subjects need necessarily be included in detail in university curricula—the physical concepts involved can be discussed, and the elaborations, such as in the book under review, are within the grasp of competent students, for whom the limited time of the academic career should be reserved for more important things.

This book, first issued 25 years ago, is "intended for the advanced student"—presumably one in his final undergraduate year. What should be the scope of such a book? In the opinion of this reviewer, it should provide an introduction to the chosen topics, from which a student may proceed to a more exhaustive examination should he wish. An essential for this is a useful supply of references to the more detailed works, and here the book is sadly deficient. Less than ten references are given to works published later than 1950. In particular, there is no reference in the chapter on atomic constants to the book by DuMond, Crowe, and Cohen (published a year before the date on the preface to this latest edition of the book under review). Other similar omissions could be cited.

More generally, it is a valuable exercise for advanced students to refer to selected original papers, and the paucity of references in this book is to be deplored.

Many names are mentioned when discussing an experiment, but few are accompanied by references. Perhaps the most obvious omission is the reference to Einstein's papers on Brownian movement (which have even been available in translation for many years), but others are also missing, such as Bohr's paper on the oscillation of a liquid jet.

As regards the contents of the text, we find many competent presentations of standard matters, and some sections (such as pp. 50-52) from which students will profit by *not* reading. The insistence upon the use of "probable error" rather than the much more general standard deviation (Chap. 13) is unfortunate. But, perhaps, for the level for which this book is intended, might these criticisms be too severe? No, for there is available at least one other book (*The General Properties of Matter* by Newman and Searle) to which none of these criticisms can be applied, and which overlaps almost completely with this one in the topics discussed. With an alternative available, and, further, with the possibility of ordering the English edition of this book direct, for little more than half the American price, this book, certainly in this edition, cannot be recommended.

Proceedings of the Fourth Midwestern Conference on Solid Mechanics (U. of Texas, Sept. 1959). 530 pp. U. of Texas, Austin, Tex., 1959. \$12.50. Reviewed by *Ellis H. Dill, University of Washington.*

A SERIES of papers on the solution, mainly by approximate methods, of special problems in the theory of elastic and plastic solids is presented. Most of the problems concern static or dynamic loading of rods, plates, or shells producing elastic or plastic behavior. Other papers treat the following: dynamic stresses in an infinite medium resulting from an extensional dislocation (3); heat transmission in closed structural boxes (16); wave propagation in an infinite cylindrical body with zero surface displacements (22); method of experimental determination of material constants in plastic wave propagation (23); behavior of a spring mass system under random loads (27); finite integral transforms, and dynamics of spin-stabilized rigid body under propulsive load (29).

Besides the explanation of computational techniques, many results which illuminate the general theory are discovered; therefore, each of these papers is of great interest to the research specialist in one of the fields mentioned. It would, however, be impractical to list all of the interesting results, or even to mention more individual papers, in this review.

Proceedings of such meetings are most useful when they can be published close to the time of writing of the papers. In order to achieve this highly desirable end, this book was produced by photo-offset from the authors' manuscripts. The copy is satisfactory and this method has surely resulted in a record for rapid dissemination of the proceedings, the book having been published within two months following the conference.



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